<u>WHAT IS CLAIMED IS:</u>

1.   A disk recording apparatus for a rewritable optical disk, the disk recording apparatus comprising:

a first timing detector having a first timing synchronized with a wobble reproduction signal of the rewritable optical disk;

a second timing detector having a second timing synchronized with a track reproduction signal of the rewritable optical disk;

a phase difference detector configured to detect a phase difference between the first timing and the second timing; and

a controller configured to determine a recording area based on the detected phase difference.

2.   A disk recording apparatus according to claim 1, wherein the controller is configured to control writing of data on the determined recording area of the optical disk.

3.   A disk recording apparatus according to claim 1,

wherein the phase difference between the first timing and the second timing is yT, y is a positive number, and T is a channel bit which is a basic unit for a recording mark length on an optical disk;

wherein, if $|y| > |w|$ is established as a relationship between the detected phase difference yT and a preset permissible cycle error value wT of a sync signal detected in the track reproduction signal and w is a positive number, the controller is configured to control writing of data on a recording area using a preset reserved area or an empty area on the optical disk; and

wherein, if $|y| \leq |w|$ is established, the controller is configured to control writing of data to a target track on the optical disk.

4.   A disk recording apparatus according to claim 1,

wherein the phase difference between the first timing and the second timing is yT, y is a positive number, and T is a channel bit which is a basic unit for a recording mark length on an optical disk;

wherein the controller is configured to employ the detected phase difference to calculate an amount n of error data relative to the track reproduction signal, n being a natural number;

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8	wherein, if n > m is established as a relationship between the amount n of error
9	data and a preset permissible amount m of error data, m being a natural number, the
10	controller is configured to control writing of data on a recording area using a preset reserved
11	area or an empty area on the optical disk; and
12	wherein, if n ≤ m is established, the controller is configured to control writing
13	of data to a target track on the optical disk.

1	5.	A disk recording apparatus according to claim 1, wherein if the
2	controller determines that the recording area for writing the data is a preset reserved area or
3	an empty area on the optical disk, the controller is configured to control the writing of the
4	data using the first timing synchronized with the wobble reproduction signal of the rewritable
5	optical disk.

1	6.	A disk recording apparatus according to claim 1,
2	wherein if the controller determines that the recording area for writing the data
3	is a target track on the optical disk, the controller is configured to control a selector to select a
4	recording timing based on the detected phase difference, and to record data on a recording
5	track in accordance with the selected timing;
6	wherein the phase difference between the first timing and the second timing is
7	yT, y is a positive number, and T is a channel bit which is a basic unit for a recording mark
8	length on an optical disk;
9	wherein, if $|y| > |w|$ is established as a relationship between the detected
10	phase difference yT and a preset permissible cycle error value wT of a sync signal detected in
11	the track reproduction signal and w is a positive number, the controller is configured to select
12	the second timing; and
13	wherein, if $|y| \le |w|$ is established, the controller is configured to select the
14	first timing.

1	7.	A disk recording apparatus according to claim 1,
2	wherein if the controller determines that the recording area for writing the data
3	is a target track on the optical disk, the controller is configured to control a selector to select a
4	recording timing based on the detected phase difference, and to record data on a recording
5	track in accordance with the selected timing;

6   wherein the phase difference between the first timing and the second timing is

7   yT, y is a positive number, and T is a channel bit which is a basic unit for a recording mark

8   length on an optical disk;

9   wherein the controller is configured to employ the detected phase difference to

10   calculate an amount n of error data relative to the track reproduction signal, n being a natural

11   number;

12   wherein, if $n > m$ is established as a relationship between the amount n of error

13   data and a preset permissible amount m of error data, m being a natural number, the

14   controller is configured to select the second timing; and

15   wherein, if $n \leq m$ is established, the controller is configured to select the first

16   timing.

1   8.   A disk recording apparatus for a rewritable optical disk, the disk

2   recording apparatus comprising:

3   a first timing detector having a first timing synchronized with a wobble

4   reproduction signal of the rewritable optical disk;

5   a second timing detector having a second timing synchronized with a track

6   reproduction signal of the rewritable optical disk;

7   a phase difference detector configured to detect a phase difference between the

8   first timing and the second timing;

9   a selector configured to select a timing between the first timing and the second

10   timing; and

11   a controller configured to control the selector to select the timing based on the

12   detected phase difference, and to record data on a recording track in accordance with the

13   selected timing.

1   9.   A disk recording apparatus according to claim 8,

2   wherein the phase difference between the first timing and the second timing is

3   yT, y is a positive number, and T is a channel bit which is a basic unit for a recording mark

4   length on an optical disk;

5   wherein, if $|y| > |w|$ is established as a relationship between the detected

6   phase difference yT and a preset permissible cycle error value wT of a sync signal detected in

7   the track reproduction signal and w is a positive number, the controller is configured to select

8   the second timing; and

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9   wherein, if $|y| \leq |w|$ is established, the controller is configured to select the

10   first timing.

1   10.   A disk recording apparatus according to claim 8,

2   wherein the phase difference between the first timing and the second timing is

3   yT, y is a positive number, and T is a channel bit which is a basic unit for a recording mark

4   length on an optical disk;

5   wherein the controller is configured to employ the detected phase difference to

6   calculate an amount n of error data relative to the track reproduction signal, n being a natural

7   number;

8   wherein, if n > m is established as a relationship between the amount n of error

9   data and a preset permissible amount m of error data, m being a natural number, the

10   controller is configured to select the second timing; and

11   wherein, if n ≤ m is established, the controller is configured to select the first

12   timing.

1   11.   A disk recording method for a rewritable optical disk, the method

2   comprising:

3   detecting a phase difference between a first timing synchronized with a

4   wobble reproduction signal of the rewritable optical disk and a second timing synchronized

5   with a track reproduction signal of the rewritable optical disk; and

6   determining a recording area for target data to be written based on the detected

7   phase difference.

1   12.   A disk recording method according to claim 11, further comprising

2   controlling the determined recording area to write the target data therein.

1   13.   A disk recording method according to claim 11,

2   wherein the phase difference between the first timing and the second timing is

3   yT, y is a positive number, and T is a channel bit which is a basic unit for a recording mark

4   length on an optical disk;

5   wherein, if $|y| > |w|$ is established as a relationship between the detected

6   phase difference yT and a preset permissible cycle error value wT of a sync signal detected in

7   the track reproduction signal and w is a positive number, the target data is written on a

8   recording area using a preset reserved area or an empty area on the optical disk; and

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9   wherein, if $|y| \leq |w|$ is established, the target data is written to a target track

10   on the optical disk.

1   14.   A disk recording method according to claim 11,

2   wherein the phase difference between the first timing and the second timing is

3   yT, y is a positive number, and T is a channel bit which is a basic unit for a recording mark

4   length on an optical disk;

5   further comprising employing the detected phase difference to calculate an

6   amount n of error data relative to the track reproduction signal, n being a natural number;

7   wherein, if $n > m$ is established as a relationship between the amount n of error

8   data and a preset permissible amount m of error data, m being a natural number, the target

9   data is written on a recording area using a preset reserved area or an empty area on the optical

10   disk; and

11   wherein, if $n \leq m$ is established, the target data is written on a target track on

12   the optical disk.

1   15.   A disk recording method according to claim 11, wherein if the

2   recording area for the target data to be written is determined to be a preset reserved area or an

3   empty area on the optical disk, controlling the writing of the target data using the first timing

4   synchronized with the wobble reproduction signal of the rewritable optical disk.

1   16.   A disk recording method according to claim 11, further comprising, if

2   the recording area for the target data to be written is determined to be a target track on the

3   optical disk, selecting a recording timing between the first timing and the second timing

4   based on the detected phase difference;

5   wherein the phase difference between the first timing and the second timing is

6   yT, y is a positive number, and T is a channel bit which is a basic unit for a recording mark

7   length on an optical disk;

8   wherein, if $|y| > |w|$ is established as a relationship between the detected

9   phase difference yT and a preset permissible cycle error value wT of a sync signal detected in

10   the track reproduction signal and w is a positive number, the second timing is selected as the

11   recording timing; and

12   wherein, if $|y| \leq |w|$ is established, the first timing is selected as the

13   recording timing.

1   17.   A disk recording method according to claim 11, further comprising, if

2 the recording area for the target data to be written is determined to be a target track on the

3 optical disk, selecting a recording timing between the first timing and the second timing

4 based on the detected phase difference;

5   wherein the phase difference between the first timing and the second timing is

6 yT, y is a positive number, and T is a channel bit which is a basic unit for a recording mark

7 length on an optical disk;

8   further comprising employing the detected phase difference to calculate an

9 amount n of error data relative to the track reproduction signal, n being a natural number;

10   wherein, if $n > m$ is established as a relationship between the amount n of error

11 data and a preset permissible amount m of error data, m being a natural number, the second

12 timing is selected as the recording timing; and

13   wherein, if $n \leq m$ is established, the first timing is selected as the recording

14 timing.

1   18.   A disk recording method for a rewritable optical disk, the method

2 comprising:

3   detecting a phase difference between a first timing synchronized with a

4 wobble reproduction signal of the rewritable optical disk and a second timing synchronized

5 with a track reproduction signal of the rewritable optical disk;

6   selecting a recording timing between the first timing and the second timing

7 based on the detected phase difference; and

8   recording data to the rewritable optical disk in accordance with the selected

9 recording timing.

1   19.   A disk recording method according to claim 18,

2   wherein the phase difference between the first timing and the second timing is

3 yT, y is a positive number, and T is a channel bit which is a basic unit for a recording mark

4 length on an optical disk;

5   wherein, if $|y| > |w|$ is established as a relationship between the detected

6 phase difference yT and a preset permissible cycle error value wT of a sync signal detected in

7 the track reproduction signal and w is a positive number, the second timing is selected as the

8 recording timing; and

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9   wherein, if $|y| \leq |w|$ is established, the first timing is selected as the

10 recording timing.

1   20. A disk recording method according to claim 18,

2   wherein the phase difference between the first timing and the second timing is

3 yT, y is a positive number, and T is a channel bit which is a basic unit for a recording mark

4 length on an optical disk;

5   further comprising employing the detected phase difference to calculate an

6 amount n of error data relative to the track reproduction signal, n being a natural number;

7   wherein, if $n > m$ is established as a relationship between the amount n of error

8 data and a preset permissible amount m of error data, m being a natural number, the second

9 timing is selected as the recording timing; and

10   wherein, if $n \leq m$ is established, the first timing is selected as the recording

11 timing.